

## **"TOWABLE RECREATIONAL WATER BOARD"**

### **Field of the Invention**

The present invention relates to a water board designed to be used for towing a person behind a water craft, such as a boat or dinghy, for recreational purposes, either on the surface of the water or under water.

### **Background to the Invention**

In most parts of the world water sports and recreational activities are immensely popular, both on inland lakes as well as on ocean beaches, particularly during the summer months. Water skiing, surfing, snorkelling, body boarding, skin diving, scurfing, wind surfing, swimming, jet skiing and kayaking are just a few of the more popular activities from which people can choose to fill their recreational time.

The present invention was developed with a view to providing a different kind of water board that would give people yet another recreational water sport to choose from that is fun and exhilarating.

References to prior art in this specification are provided for illustrative purposes only and are not to be taken as an admission that such prior art is part of the common general knowledge in Australia or elsewhere.

### **Summary of the Invention**

According to one aspect of the present invention there is provided a recreational water board for towing a person behind a water craft on or below the surface of the water, the board comprising:

a substantially planar structure, having a pair of wings respectively provided either side of a central axis of symmetry, said structure having a leading edge and a trailing edge, the leading edge of each wing being swept-back to give the board a hydro-dynamically contoured profile;

at least three handgrips arranged symmetrically on the structure to enable the board to be firmly gripped while being towed, a first pair of rear handgrips being provided adjacent the trailing edge of each wing on either side

respectively of said central axis and a third rear handgrip being provided adjacent the trailing edge of the structure substantially aligned with said central axis, each of said rear handgrips being provided in substantially the same plane as said planar structure; and

a pair of apertures provided adjacent said leading edge and arranged symmetrically on either side respectively of the central axis for attaching a tow bridle to the board, said pair of apertures defining a pivot axis, perpendicular to said central axis, about which said board may be tilted to enable the user to dive or resurface in the water, in use, depending on the direction of tilt.

According to another aspect of the present invention there is provided a recreational water board for towing a person behind a water craft on or below the surface of the water, the board comprising:

a substantially planar structure formed of buoyant material, having a pair of wings respectively provided either side of a central axis of symmetry, said structure having a leading edge and a trailing edge, the leading edge of each wing being swept-back to give the board a hydro-dynamically contoured profile;

at least one hand grip on the structure to enable the board to be firmly gripped while being towed;

a fin arrangement comprising three fins on an underside of the structure, a central fin positioned on the central axis of symmetry of the structure, and two outer fins spaced equidistantly from the central fin and substantially parallel to the central axis of symmetry; and,

a pair of apertures provided adjacent said leading edge and arranged symmetrically on either side respectively of the central axis for attaching a tow rope to the board, said pair of apertures defining a pivot axis, perpendicular to said central axis, about which said board may be tilted to enable the user to dive or resurface in the water, in use, depending on the direction of tilt.

Preferably said pair of apertures is one of a series provided adjacent to the leading edges respectively of each wing, each pair of apertures in said series being spaced progressively closer to each other, either side respectively of

said central axis, wherein said pivot axis can be adjusted progressively closer to or further away from the front of the board.

Preferably said tow bridle is coupled to a tow rope by means of a swivel device. Advantageously the tow bridle comprises a single bridle rope coupled at each end to said pair of apertures, said bridle rope being slidably attached to said swivel device whereby the bridle rope is free to slide through the swivel device, thereby permitting the board to be angled from side to side more easily.

Preferably the trailing edge of the structure has a central cut-out portion adapted to accommodate a person's head when the board is held overhead in use.

Preferably the structure is formed of buoyant material with a specific gravity of typically between 0.5 and 0.75. Preferably the buoyant material has a specific gravity of about 0.6 so that the structure may be relatively lightweight and may readily float to the surface of the water.

Preferably a second pair of front handgrips are provided on the leading edge of each wing on either side respectively of said central axis. If desired a third front handgrip may be provided on the leading edge of the structure and located centrally aligned with said third rear handgrip.

Preferably the board further comprises a fin arrangement on an underside of the structure to assist in guiding and steering the board through the water. The fin arrangement may comprise a single fin positioned on an underside of the planar structure. Alternatively, the fin arrangement may comprise a plurality of fins positioned on an underside of the planar structure. Preferably the fin arrangement comprises three fins, namely a central fin positioned on the central axis of symmetry of the structure, and two outer fins spaced equidistantly from the central fin and substantially parallel to the central axis of symmetry.

The central fin is preferably larger than the outer fins, and the outer fins are preferably of substantially equal size. The fins are preferably substantially triangular in shape. The outer edges of the fins are typically curved to assist

with ease of movement through the water. Preferably the central fin is positioned in alignment with the third rear handgrip and the outer fins are positioned in alignment with the first pair of rear handgrips.

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

#### **Brief Description of the Drawings**

The invention will be better understood by reference to the following description of two specific embodiments, given by way of example only, as shown in the accompanying drawings, in which:

Figure 1 shows a top perspective view of a first preferred embodiment of the towable recreational water board according to the present invention;

Figure 2 shows a plan view of the water board of Fig. 1 with a tow rope attached for connection to a water craft;

Figures 3a, 3b and 3c are side elevations respectively of the water board of Fig. 2 showing how the board may be tilted in use to cause the board to dive or resurface respectively;

Figure 4 shows the water board of Fig. 2 being used to tow a person behind a water craft;

Figure 5 shows a top perspective view of a second preferred embodiment of the towable recreational water board according to the present invention;

Figure 6 shows an underside perspective view of the water board of Fig. 5;

Figure 7a, 7b and 7c are top plan, front and side views respectively of the water board of Fig. 5;

Figure 8a and 8b are plan views of the water board showing how the board may be angled from side to side about the central axis; and,

Figure 9 illustrates a swivel device for attaching the tow bridle of the water board to a tow rope.

#### **Detailed Description of Preferred Embodiment**

A first preferred embodiment 10 of the towable recreational water board according to the present invention, as illustrated in Figs. 1 and 2, comprises a substantially planar structure 12 formed of buoyant material, such as polyethylene plastics material with a specific gravity of typically between 0.5 and 0.75. Preferably the buoyant material has a specific gravity of about 0.6 so that the board is relatively lightweight and will readily float back to the surface when released underwater.

The structure 12 of this embodiment is about 600 mm in width and 400 mm in length, and has a substantially uniform thickness of about 15 mm. It will be understood that the board may come in a variety of other shapes and sizes.

The structure 12 has a pair of wings 16 respectively provided either side of a central axis of symmetry 14. The structure 12 has a leading edge 18 and a trailing edge 20. The leading edge 18 of each of the wings 16 is swept-back to give the board a hydro-dynamically contoured profile, not dissimilar to that of a manta ray. The trailing edge 20 of the structure 12 has a cut-out portion 22 adapted to accommodate a person's head when the board is held overhead.

The board 10 further comprises a pair of apertures 24a provided adjacent the leading edge 18 and arranged symmetrically on either side of the central axis 14 for attaching a tow bridle 26 to the board, as illustrated in Fig. 2. The pair of apertures 24a effectively define an axis of pivot 28 about which the board may be tilted to enable the user to dive or resurface in the water, in use, as will be described further below with reference to Figs. 3 and 4. The pivot axis 28 is substantially perpendicular to the central axis 14 of the board. Preferably less than half of the surface area of the board is located forward of the pivot axis 28.

In this first embodiment, the pair of apertures 24a is one of a series of such pairs of apertures 24a, 24b, 24c and 24d provided at regular intervals adjacent the leading edges 18 respectively of each wing 16. Each pair of apertures in the series is spaced progressively closer to each other, either side of the central axis 14 of the board, with the first pair of apertures 24a being the most spaced apart and a fourth pair of apertures 24d being the least spaced apart. Significantly, because of the swept-back profile of the leading edge 18, each pair of apertures 24 in the series is also positioned progressively forward of its neighbour in the direction of the central axis 14. By providing such a series of apertures 24, for attaching the tow bridle 26 to the board, the position of pivot axis 28 can be adjusted progressively closer to the front of the board. This has an important bearing on the ease with which the board may be tilted and/or angled, in use, as will be described in more detail below with reference to Figs. 3 and 4.

Tow bridle 26 is attached to the apertures 24 by means of shackles 44 that can be rapidly coupled to, or uncoupled from, the apertures 24 to adjust the pivot axis 28 of the board. In the first embodiment the tow bridle 26 is comprised of two sections 26a each of about 1.50 metres in length. The tow bridle 26 is preferably coupled to a main tow rope 48, connected to the water craft 42, by means of a swivel 46. The main tow rope 48 is about 20 metres in length. This length allows the person 40 to reach a depth of about 12 metres underwater which is considered a safe depth for use of the board by persons of all ages. The main tow rope 48 may be increased in length to about 50 metres which allows the more experienced user to reach a depth of about 20 metres.

The board 10 further comprises a plurality of handgrips arranged symmetrically on the structure 12 to enable the board to be gripped firmly while being towed. In this embodiment of the water board 10, a first pair of rear handgrips 30 are provided adjacent the trailing edge 20 of each wing 16 on either side respectively of the cut-out portion 22. A third rear handgrip 32 is provided adjacent the trailing edge 20 of the structure and located centrally of the cut-out portion 22. In this embodiment, all three rear handgrips 30 and 32 are provided by forming elongated rectangular slots in the structure 12

adjacent the trailing edge 20 of the board. However the rear handgrips could also be provided by forming handles that protrude from the trailing edge 20 of the board.

The water board may also be provided with a second pair of front handgrips 34 on the leading edge 18 of each wing 16, as in the illustrated first embodiment 10. The pair of front handgrips 34 are located either side respectively of the central axis 14, and are formed by a recessed portion in the leading edge 18 of each wing respectively. A third front handgrip 36 may be provided on the leading edge 18 of the structure 12, and located centrally and aligned with the third rear handgrip 32. Both the front and rear third handgrips 36 and 32 are provided for single-handed operation of the water board 10, in the event that the person being towed on the board wishes to keep their other hand free, for example, for holding onto another object or a companion, or to pinch their nose to equalise the pressure when diving under water.

The second preferred embodiment as illustrated in Figs. 5 to 7 resembles the first embodiment in many respects, and the same reference numerals will therefore be used to refer to the same or similar parts. The underside 50 of the water board of the second embodiment is provided with a fin arrangement in the form of larger central fin 52 and two smaller outer fins 54. As can be seen in Fig.6, the central fin 52 is positioned on the central axis of symmetry of the water board 10 and the outer fins 54 are spaced equidistantly from the central fin 52. The central fin 52 is in alignment with the third rear handgrip 32 and the outer fins 54 are in alignment with the first pair of rear handgrips 30.

The positioning of the fins 52 and 54 close to the handgrips 32 and 30 respectively assists the user of the board to manoeuvre and steer the board 10 through the water. As can be seen in Fig. 6, the fins 52 and 54 have curved edges 56 and 58 respectively directed away from the leading edges 18 towards the trailing edge 20. Furthermore, the fins 52 and 54 protect the hands of the user from obstacles such as rocks present on the ocean or river floor.

In this embodiment the tow bridle comprises a single bridle rope 26 coupled at each end to the respective apertures 24. The bridle rope 26 is slidably attached to a swivel device 60 whereby the bridle rope is free to slide through the swivel device 60, thereby permitting the board to be angled to either side of the central axis 14 whilst maintaining tension in the bridle rope 26 on both sides of the swivel device 60. Figure 9 is an enlarged view of the swivel device 60 showing how the bridle rope is free to slide through one loop of the swivel device. This has an important bearing on the ease with which the board may be angled from side to side, in use, as will be described in more detail below with reference to Figs. 8a and 8b.

Typical operation of the towable recreational water board 10 of the first embodiment will now be described with reference to Figs. 3 and 4. As illustrated in Fig. 4, a person 40 who wishes to be towed on the board 10 behind a water craft 42, grips one or more of the handgrips provided on the board 10. In this case the person 40 has gripped the pair of rear handgrips 30. Preferably the person 40 wears a diving mask and snorkel to enable them to remain submerged for longer periods, although this is not essential. The head may be held in an upright position as shown in Fig. 4. or in a horizontal position between the arms, facing down. In the latter position, the head will be accommodated in the cut-out portion 22, especially when the board is held by the front handgrips 34. The water craft 42 typically travels at 2 - 3 knots through the water when towing the person.

When the board 10 is kept in a substantially horizontal orientation as shown in Figs. 3a and 4 it will move through the water in a substantially horizontal motion. In order to dive below the surface of the water, the user tilts the board 10 about the pivot axis 28 so that the leading edge of the board digs into the water as shown in Fig. 3b. This has the effect of temporarily creating a high pressure zone on the upper surface of the board and a low pressure zone on the lower surface of the board, causing it to move in a downwards direction. In order to return to the surface, the user tilts the board 10 about the pivot axis 28 so that the leading edge of the board is lifted as shown in Fig. 3c. This has the opposite effect of temporarily creating a low pressure zone on the upper

surface of the board and a high pressure zone on the lower surface of the board, causing it to move in an upwards direction.

The tilting of the board 10 can be effected by the user applying a torque to the board about the pivot axis 28, by pushing downwards or pulling upwards on the rear handgrips 30 or 32, or pulling upwards or pushing downwards on the front handgrips 34 or 36. The amount of torque required to tilt the board will vary depending on the position of the pivot axis 28. The closer the pivot axis 28 is to the front of the board the easier it becomes for the user to tilt the board. It therefore has the effect of stabilising the board in use, as it tends to want to return to the horizontal rest position. On the other hand, the further away from the front of the board the pivot axis is located the more difficult it becomes for the user to tilt the board. It therefore has the effect of making the board less stable in use, as it tends to want to more readily depart from the horizontal rest position. Therefore, the tow rope 26 is generally attached to the foremost pair of apertures 24d when the board is being used by a child or beginner. The position of the tow rope connection points can be adjusted for more experienced users.

Swivel 46 permits rotation of the water board 10 about its central axis 14 without twisting the main tow rope. This provides a further degree of freedom in the types of manoeuvres that can be performed with the water board 10 in use. For example, by tilting the board sideways about the central axis 14 the user can do one or more "barrel rolls" to turn 360 degrees underwater. As the material from which the board is made is not too rigid to permit a degree of flexing by the user, its direction of travel on or under the water can be further controlled by flexing the board in different directions and to varying degrees, if desired.

Typical operation of the towable recreational water board 10 of the second embodiment will now be described with reference to Figs. 8a and 8b. The water board 10 of Figures 5 to 8 is used in much the same way as that illustrated in Figures 1 to 4, however in this case the provision of the fin arrangement on the underside of the board allows the water board 10 to be more easily turned from side to side away from the direction of travel of the

water craft. Swivel device 60 permits angling of the water board 10 away from the direction of travel without loosening the tension in the bridle rope 26. This provides a further degree of freedom in the types of manoeuvres that can be performed with the water board 10 in use. For example, by turning the board sideways, to the left or the right, the user can travel at an angle to the direction of travel of the water craft as shown in Figures 8a and 8b.

It will be appreciated that two or more persons may be towed simultaneously on separate boards behind the same water craft to vary the recreational experience. Lights and/or other decorative features, such as stripes, may be placed at prominent points on the board to further enhance its aesthetic appeal.

From the above description of a preferred embodiment of the towable recreational water board it will be apparent that it has a number of advantages, including the following:

- (i) It is lightweight and easy to use by both children and adults;
- (ii) It is simple and inexpensive to manufacture using a plastics material moulding process and therefore readily lends itself to mass production;
- (iii) Its planar construction means that it can be easily packed, stored and transported in large quantities;
- (iv) Its manoeuvrability in the water, both on and below the surface, facilitates a wide range of movements and recreational activities.

It will be readily apparent to persons skilled in the relevant arts that various modifications and improvements may be made to the foregoing embodiments, in addition to those already described, without departing from the basic inventive concepts of the present invention. For example, the structure 12 of the board may include one or more longitudinal V-shaped grooves and/or ribs extending substantially parallel to the central axis of the board. Therefore, it will be appreciated that the scope of the invention is not limited to the specific embodiments described.